CLAIM AMENDMENTS

Claim Amendment Summary

Claims pending

- Before this Amendment: Claims 1-32.
- After this Amendment: Claims 1-32

Non-Elected, Canceled, or Withdrawn claims: none

Amended claims: 1-6, 8-16, 19-25, 27, 29, 30, and 32

New claims: none
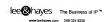

Claims:

1. **(Currently Amended)** A method, comprising:

receiving an input ~~that conforms to a language~~;

determining whether the input can be processed by ~~a selective~~ an optimized filter sub-engine ~~which supports only a subset of a query~~, wherein the optimized filter sub-engine is configured to handle only a subset of the language, wherein the subset of the language does not include all aspects of the language; and
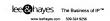
if the determining indicates that the input can be processed by the ~~selective~~ optimized filter sub-engine, then directing the input to the ~~selective~~ optimized filter sub-engine for processing ~~in less time than would be required by a general sub-engine which fully supports the query language~~;

if the determining indicates that the input cannot be processed by the ~~selective~~ optimized filter sub-engine, then directing the input to ~~the~~ a general

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filter sub-engine for processing, wherein the general filter sub-engine is configured to handle all aspects of the language; and

processing the input to derive a result.

2.   **(Currently Amended)** The method as recited in claim 1, wherein:

the selective optimized filter sub-engine and the general filter sub-engine are encompassed by components of a single filter engine.

3.   **(Currently Amended)** The method as recited in claim 1, wherein the determining further comprises recognizing whether or not the input conforms to a grammar of the selective optimized filter sub-engine.

4.   **(Currently Amended)** The method as recited in claim 1, wherein the input language comprises a query language based on eXtensible Markup Language (XML).

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5. **(Currently Amended)** The method as recited in claim 1, wherein the ~~selective~~ optimized filter sub-engine ~~includes~~ is a first optimized filter sub-engine ~~which supports only a first unique subset of the query language and a second sub-engine which supports only a second unique subset of the query language~~, and wherein the method further comprises:
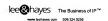
if the determining indicates that the input cannot be processed by the first optimized filter sub-engine, then instead of directing the input to the general filter sub-engine for processing:

determining whether the input can be processed by ~~the first sub-engine or by the second sub-engine~~ a second optimized filter sub-engine, wherein the second optimized filter sub-engine is configured to handle only a subset of the language, and wherein the subset of the language that the second optimized filter sub-engine is configured to handle is different than the subset of the language that the first optimized filter sub-engine is configured to handle;

~~if the determining indicates that the input can be processed by the first sub-engine, then directing the input to the first sub-engine for processing;~~

if the determining indicates that the input can be processed by the second optimized filter sub-engine, then directing the input to the second optimized filter sub-engine for processing; and

if the determining indicates that the input cannot be processed by the ~~first sub-engine, and that the input cannot be processed by the~~ second optimized filter sub-engine, then directing the input to the general optimized filter sub-engine for processing.

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6. **(Currently Amended)** The method as recited in claim 1, further comprising:

parsing the input to ~~determine if different~~ identify first and second sub-expressions ~~can be identified~~;

~~if the different sub-expressions are identified,~~ determining ~~if a~~ whether the first sub-expression can be processed by the ~~selective~~ optimized filter sub-engine;

if the first sub-expression can be processed by the ~~selective~~ optimized filter sub-engine, then directing the first sub-expression to the ~~selective~~ optimized filter sub-engine for processing;

if the first sub-expression cannot be processed by the ~~selective~~ optimized filter sub-engine, directing the first sub-expression to the general filter sub-engine for processing;

determining whether the second sub-expression can be processed by the optimized filter sub-engine;

if ~~a~~ the second sub-expression can be processed by the ~~selective~~ optimized filter sub-engine, directing the second sub-expression to the ~~selective~~ optimized filter sub-engine for processing; and

if the second sub-expression cannot be processed by the ~~selective~~ optimized filter sub-engine, directing the second sub-expression to the general filter sub-engine for processing.

7. **(Original)** The method as recited in claim 6, further comprising:

obtaining a result of the processing of the first sub-expression; and

processing the second sub-expression only if the result of the first sub-expression is true.

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8.   (Currently Amended) A filter engine, comprising:

~~at least one selective~~ an optimized filter sub-engine configured to accept an input that conforms to a language and process the input against a filter table associated with the ~~selective~~ optimized filter sub-engine, wherein the ~~selective~~ optimized filter sub-engine is configured to process only a subset of terms of ~~an input~~ the language, wherein the subset of terms of the language does not include all terms of the language;

a general filter sub-engine configured to accept ~~an~~ the input and process the input against a filter table associated with the general filter sub-engine, wherein the general filter sub-engine is configured to process ~~only~~ all terms of the input language; and

an analyzer configured to determine whether the input can be processed by the ~~selective~~ optimized filter sub-engine and, if so, ~~directing~~ direct the input to the ~~selective~~ optimized filter sub-engine for processing or, if not, ~~directing~~ direct the input to the general filter sub-engine for processing.

9.   (Currently Amended) The filter engine as recited in claim 8, wherein the analyzer is further configured to analyze a new filter added to the filter engine and to determine an appropriate ~~matcher~~ filter sub-engine with which to associate the new filter.

10.   (Currently Amended) The filter engine as recited in claim 8, wherein the ~~input~~ language is XPath.

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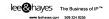www.leehayes.com   509.324.9256

11. (Currently Amended) The filter engine as recited in claim 8, wherein the analyzer is further configured to determine whether the ~~selective~~ optimized filter sub-engine can process the input by comparing the input to a grammar associated with the ~~selective~~ optimized filter sub-engine and determining whether the input consists of terms that are compatible with the grammar.

12. (Currently Amended) The filter engine as recited in claim 8, further comprising a sub-expression module that is configured to:

determine whether the input consists of different sub-expressions;

if the input consists of different sub-expressions, directing each of the different sub-expressions contained in the input to the analyzer; and

wherein the analyzer is further configured to determine whether each of the different sub-expressions can be processed by the ~~efficient matcher~~ optimized filter sub-engine and to direct each of the different sub-expressions to an appropriate ~~matcher~~ filter sub-engine for processing.

13. (Currently Amended) The filter engine as recited in claim 12, wherein a first ~~sub-expression may be~~ of the different sub-expressions is directed to the ~~selective~~ optimized filter sub-engine and a second ~~sub-expression may be~~ of the different sub-expressions is directed to the general filter sub-engine.

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14. (Currently Amended) The filter engine as recited in claim 8, wherein the ~~at least one selective~~ optimized filter sub-engine ~~further~~ comprises:

a first ~~selective~~ optimized filter sub-engine configured to process inputs that conform to a first subset of the ~~input~~ language; and

a second ~~selective~~ optimized filter sub-engine configured to process inputs that conform to a second subset of the ~~input~~ language; ~~and~~

wherein the first subset of the language is different from ~~and~~ the second subset ~~are unique subsets~~ of the input language.

15. (Currently Amended) One or more computer-readable storage media containing computer-executable instructions that, when executed, direct a computing system to ~~on a computer, perform the following steps~~:

~~determining~~ determine an appropriate filter sub-engine to which an input message should be directed for processing against a set of queries;

processing the input message ~~in a selective~~ using an optimized filter sub-engine if the ~~selective~~ optimized filter sub-engine comprises a grammar that supports processing of the input message;

processing the input message in a general filter sub-engine if the ~~selective~~ optimized filter sub-engine grammar does not support processing of the input message; and

wherein:

the input message is in accordance with a query language;

the ~~selective~~ optimized filter sub-engine supports a subset, less than the whole, of the query language; and

the general filter sub-engine supports the entire query language.

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16.   (Currently Amended) The one or more computer-readable storage media as recited in claim 15, further comprising computer-executable instructions that, when executed, direct the computing system to:

~~the step of accepting~~ accept input messages for both the ~~selective~~ optimized filter sub-engine and the general filter sub-engine by way of a single input means so that an input message sending application does not have to distinguish between the ~~the selective~~ optimized filter sub-engine and the general filter sub-engine.

17.   (Previously Presented)   The one or more computer-readable storage media as recited in claim 15, wherein the query language is XPath.

18.   (Previously Presented)   The one or more computer-readable storage media as recited in claim 15, wherein the query language is an XML query language.

19.   (Currently Amended) The one or more computer-readable storage media as recited in claim 15, further comprising computer-executable instructions that, when executed, direct the computing system to ~~the steps of~~:

~~analyzing the input message~~ prior to determining which filter sub-engine will process the input message, ~~and to determine if~~ parse the input message ~~can be parsed~~ into two or more sub-expressions;

for each ~~sub-expression identified, determining~~ of the two or more sub-expressions, determine an appropriate filter sub-engine that can process the sub-expression; and

~~directing~~ direct each ~~sub-expression~~ of the two or more sub-expressions to the appropriate filter sub-engine for processing.

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20.   (Currently Amended) The one or more computer-readable storage media as recited in claim 19, further comprising <u>computer-executable instructions that, when executed, direct the computing system to derive</u> ~~the step of deriving a~~ final result of the input message processing from at least one result of the sub-expression processing.

21.   (Currently Amended) The one or more computer-readable storage media as recited in claim 19, further comprising ~~the steps of~~ <u>computer-executable instructions that, when executed, direct the computing system to</u>:

~~determining~~ <u>determine</u> if a first <u>of the two or more sub-expressions</u> ~~sub-expression~~ evaluates true;

~~proceeding~~ <u>proceed</u> with processing of subsequent <u>of the two or more</u> sub-expressions if the first sub-expression ~~is~~ <u>evaluates to</u> true; and

~~foregoing~~ <u>forego</u> processing of subsequent <u>of the two or more</u> sub-expressions if the first sub-expression ~~is~~ <u>evaluates to</u> false.

22.   (Currently Amended) The one or more computer-readable storage media as recited in claim 15, wherein each <u>filter</u> sub-engine includes a set of queries against which input messages directed to the respective <u>filter</u> sub-engine are tried, and wherein each set of queries is unique.

23.   **(Currently Amended)** A message processing system, comprising:

means for receiving a message;

~~a selective~~ an optimized filter sub-engine ~~which~~ that supports only a subset, less than the whole, of a message language, wherein the message conforms to the message language;

a general filter sub-engine ~~which~~ that supports all of the message language;

analyzing means for analyzing the message to determine if the ~~selective~~ optimized filter sub-engine is configured to process the message; and

distribution means for distributing the message:

to the ~~selective~~ optimized filter sub-engine if the ~~selective~~ optimized filter sub-engine can process the message; or

to the general filter sub-engine if the ~~selective~~ optimized filter sub-engine cannot process the message.

24.   **(Currently Amended)** The message processing system as recited in claim 23, wherein:

the ~~selective~~ optimized filter sub-engine comprises a first set of queries against which the message can be compared;

the general filter sub-engine ~~further~~ comprises a second set of queries against which the message can be compared; and

the first set of queries contains fewer queries than the second set of queries.

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25.   (Currently Amended) The message processing system as recited in claim 23, wherein:

the message ~~conforms to~~ language comprises an XML query language;

the general filter sub-engine is configured to support the entire XML query language; and

the ~~selective~~ optimized filter sub-engine is configured to support a subset of the XML query language, wherein the subset of the XML query language is less than the entire XML query language.

26.   (Original) The message processing system as recited in claim 25, wherein the XML query language is XPath.

27.   (Currently Amended) The message processing system as recited in claim 23, wherein the ~~selective~~ optimized filter sub-engine ~~further~~ comprises means for increasing message processing performance ~~includes~~ by combining individual filters for use in a single procedure.

28.   (Previously Presented)   The message processing system as recited in claim 27, wherein the means for increasing message processing performance further comprises a hash function.

29.   (Currently Amended) The message processing system as recited in claim 23, wherein~~:~~

the ~~selective~~ optimized filter sub-engine ~~includes~~ comprises:

a first ~~selective~~ optimized filter sub-engine ~~which~~ that supports only a first unique subset of the query language~~; and~~

~~and~~ a second ~~selective~~ optimized filter sub-engine ~~which~~ that supports only a second unique subset of the query language; and

each of the first and second unique subsets of the query language are less than that entire query language;

the distribution means is further configured to ~~direct~~ distribute the message to the second ~~selective~~ optimized filter sub-engine if the first ~~selective~~ optimized filter sub-engine cannot process the message but the second ~~selective~~ optimized filter sub-engine can process the message.

30.   (Currently Amended) The message processing system as recited in claim 23, further comprising~~:~~

means for parsing the message into constituent sub-expressions~~:~~

~~, and~~ wherein the analyzing means is further configured to process ~~individual sub-expression~~ each of the constituent sub-expressions as an individual message and to evaluate sub-expression processing results to derive a result corresponding to the message.

31.   (Original) The message processing system as recited in claim 23, wherein the message is a sub-expression of a parent message.

32.   (Currently Amended) The message processing system as recited in claim 23, further comprising means for determining whether a filter in the system is associated with the general <u>filter </u>sub-engine or with the ~~selective~~ <u>optimized filter </u>sub-engine.